IN THE CLAIMS:

1. (Currently Amended) A lidar system comprising:

a transmitter for transmitting an optical beam having a primary wavelength between about 1.5 – 1.8 microns and having a first value of divergence, said optical beam further having a pulse repetition frequency of at least about 10 Hz and a pulse energy of at least about 100 mJ/pulse; and

a receiver for receiving scattered radiation of said optical beam, said receiver having a second value of field of view defined by a detector surface and detector optics and a range resolution of no more than about 50 meters;

wherein said second value of field of view of said detector subsystem is at least about as great as said first value of divergence of said transmitter subsystem.

2. (Previously Presented) A lidar system as set forth in Claim 1, wherein said transmitter comprises a laser pump for providing a source beam having a source wavelength different than said primary wavelength and a wavelength shifter for shifting said source beam from said source wavelength to said primary wavelength.

3. (Original) A lidar system as set forth in Claim 2, wherein said wavelength shifter comprises a Raman wavelength shifter.

4. (Original) A lidar system as set forth in Claim 3, wherein said Raman wavelength shifter includes at least one internal reflectance element for redirecting said beam within a housing of said Raman wavelength shifter substantially free from surface reflection.

5. (Original) A lidar system as set forth in Claim 3, wherein said Raman wavelength shifter comprises at least one optical element disposed at a Brewster angle with respect to said beam.

6. (Original) A lidar system as set forth in Claim 3, wherein said transmitter further comprises a seed laser for providing a seed beam for transmission to said Raman wavelength shifter together with said source beam.

7. (Original) A lidar system as set forth in Claim 6, wherein said source beam and said seed beam have substantially equal beamwidths and are arranged for substantially coaxial transmission to said Raman wavelength shifter.

8. (Original) A lidar system as set forth in Claim 3, wherein said transmitter further comprises a beam compressor disposed between said laser pump and said Raman wavelength shifter for compressing said source beam from a first width to a second width less than said first width substantially free from focusing in relation to said Raman wavelength shifter.

9. (Original) A lidar system as set forth in Claim 3, wherein said transmitter further comprises a gas circulation system for circulating a gas relative to a housing of said Raman wavelength shifter.

10. (Original) A lidar system as set forth in Claim 9, wherein said gas circulation system comprises a gas pump disposed outside of said housing.

11. (Original) A lidar system as set forth in Claim 3, wherein said transmitter further comprises a beam expander for receiving said optical beam from said Raman wavelength shifter and expanding said beam from a first beamwidth to a second beamwidth greater than said first beamwidth.

12. (Original) A lidar system as set forth in Claim 3, wherein said transmitter further comprises a filter for receiving an output beam from said Raman wavelength shifter and removing a component therefrom associated with said source wavelength.

13. (Original) A lidar system as set forth in Claim 1, wherein said receiver comprises collection optics for collecting said backscattered radiation into a compressed beam, a detector for converting incident radiation into an electrical signal representative of said incident radiation, and focusing optics interposed between said collection optics and said detector for receiving said

compressed beam and directing said compressed beam onto an active detector surface of said detector.

14. (Original) A lidar system as set forth in Claim 13, wherein said collection optics comprises a telescope.

15. (Previously Presented) A lidar system as set forth in Claim 13, wherein said receiver further comprises a collimator disposed between said collection optics and said focusing optics for collimating said compressed beam and a filter, disposed between said collimator and said focusing optics, for filtering said compressed beam on a wavelength dependent basis.

16. (Original) A lidar system as set forth in Claim 13, wherein said detector comprises an InGaAs conversion medium

17. (Original) A lidar system as set forth in Claim 1, wherein said transmitted optical beam and said received scattered radiation are substantially coaxial.

18. (Original) A lidar system as set forth in Claim 1, wherein said second value is between about 1.0 and 1.5 times said first value.

19. (Original) A lidar system as set forth in Claim 1, further comprising a scanner for scanning said optical beam relative to at least one scan axis.

20. (Original) A lidar system as set forth in Claim 19, wherein said scanner is operative to scan said optical beam relative to two axes.

21.-22. Cancelled.

23. (Original) A lidar system as set forth in Claim 1, wherein said receiver comprises a processor for generating an atmospheric aerosol image based on data acquired in less than 1 second by said detector.

24. – 63. Cancelled

64. (Currently Amended) A method for analyzing atmospheric aerosols, comprising the steps of:

transmitting a beam having a wavelength of between about 1.5 – 1.8 microns, a pulse energy of at least about 100 mJ/pulse and a first value of divergence into the atmosphere; and

receiving backscattered radiation of said beam using a receiver having a second value of field of view at least about equal to said first value of divergence and a range resolution of no more than about 50 meters.

65. – 66. Cancelled.

67. (Previously Presented) The method as set forth in Claim 64, wherein said step of transmitting comprises transmitting said beam with a pulse repetition frequency of at least about 10 Hz.

68. (Previously Presented) The method as set forth in Claim 67, further comprising the step of analyzing said received radiation to detect atmospheric aerosols.